Audit Report

OFFICE OF THE INSPECTOR GENERAL

LESSONS LEARNED FROM ACQUISITIONS OF
MODIFIED COMMERCIAL ITEMS AND
NONDEVELOPMENTAL ITEMS

Report No. 97-219   September 23, 1997

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Acronym

FAR   Federal Acquisition Regulation

September 23, 1997

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION
AND TECHNOLOGY
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL
MANAGEMENT AND COMPTROLLER)
ASSISTANT SECRETARY OF THE AIR FORCE
(FINANCIAL MANAGEMENT AND COMPTROLLER)
AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Audit Report on Lessons Learned From Acquisitions of Modified
Commercial Items and Nondevelopmental Items (Report No. 97-219)

We are providing this audit report for information and use. We provided a draft
of this report to you on July 18, 1997. Because the report contains no findings or
recommendations, but summarizes reported lessons learned for modified commercial
and nondevelopmental items reviewed, no written comments were required, and none
were received. Therefore, we are publishing this report in final form.

We appreciate the courtesies extended to the audit staff. Questions on the audit
should be directed to Mr. John E. Meling, Audit Program Director, at (703) 604-9091
(DSN 664-9091) or Mr. David M. Wyte, Audit Project Manager, at (703) 604-9027
(DSN 664-9027). See Appendix G for the report distribution. The audit team
members are listed inside the back cover.

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Deputy Assistant Inspector General
For Auditing

Office of the Inspector General, DoD

Lessons Learned From Acquisitions of Modified Commercial Items and Nondevelopmental Items

Executive Summary

Introduction. This report discusses buying organizations' lessons learned from the acquisitions of modified commercial items and nondevelopmental items. For more than 20 years, DoD policy has been to acquire suitable commercial and nondevelopmental items instead of developing new items. Enactments of the Federal Acquisition Streamlining Act of 1994 and the Federal Acquisition Reform Act of 1996 broadened the definitions of commercial items and made it easier for buying organizations to use streamlined acquisition procedures for acquiring modified commercial and nondevelopmental items. In addition, DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," March 15, 1996, directs buying organizations to define requirements in terms that enable and encourage commercial offerors to compete to fill such requirements.

Audit Objective. The audit objective was to determine lessons learned from the acquisition management of Defense systems developed and procured using modified commercial item and nondevelopmental item acquisition strategies. The audit also evaluated the effectiveness of management controls related to the objective.

Audit Results. Defense buying organizations have made progress in strengthening acquisition strategies used to acquire modified commercial and nondevelopmental items. The buying organizations identified lessons learned that described efforts taken to manage program uncertainties resulting from the transfer of acquisition management control from buying organizations to commercial suppliers. Program management efforts intensified because to remain competitive, commercial suppliers often retain proprietary rights to technical data that often affect or describe product performance, quality, and logistical support. To effectively manage modified commercial and nondevelopmental items, buying organizations must identify program uncertainties applicable to the acquisitions and develop acquisition strategies to manage the program uncertainties.

The management controls were effective in that no material management control weakness was identified. See Appendix A for details on the management control program.

Management Comments. We provided a draft of this report on July 18, 1997. Because this report contains no findings or recommendations, written comments were not required, and none were received. Therefore, we are publishing this report in final form.

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Part I - Audit Results

Audit Background

DoD first emphasized acquisitions of commercial products and nondevelopmental items when it created the Acquisition of Commercial Products Program in 1976. Congress strengthened that policy by requiring DoD to give preference to acquiring commercial and nondevelopmental items to satisfy military requirements with the enactment of the National Defense Authorization Act of 1986. DoD further advanced commercial and nondevelopmental item acquisitions by endorsing open system architecture designs for electronic and communication systems, subsystems, and major components and by conducting congressionally directed foreign comparative tests for weapon systems. By taking those actions, DoD can benefit from technology advancements that the electronics and communication industries made and from the acquisition of weapon systems that foreign governments developed.

Broadened Definition of Commercial Items. The Federal Acquisition Streamlining Act of 1994 and the Federal Acquisition Reform Act of 1996 broadened the definition of a commercial item. As redefined, systems, subsystems, and components other than real property are considered commercial items or modified commercial items if they are of a type that has:

- been offered for sale, sold, leased, or licensed to the general public;

- evolved through technology or performance advances and will be available in the commercial marketplace in time to meet proposed Government delivery requirements; or

- required modifications of a type customarily available in the commercial marketplace or required minor modifications of a type not customarily available in the commercial marketplace to meet DoD requirements.

Besides broadening the definition of commercial items, the 1994 and 1996 Acts enabled DoD to revise and modify acquisition regulations as follows:

- simplify contracting procedures for acquisitions not costing more than $5 million, when contracting officers reasonably believe that only commercial items will be offered;

- exempt the contract requirement to provide cost or pricing data for commercial items;

- give contracting officers flexibility in determining price reasonableness for contracts, subcontracts, and modifications;

- provide contracting officers a list of Federal Acquisition Regulation (FAR) provisions that are not applicable for commercially available items; and

- remove more than 30 contractor certification requirements that are not specifically imposed by statute.

The 1994 and 1996 Acts made it easier for buying organizations to acquire modified commercial items by eliminating barriers to fully implementing DoD policy of acquiring commercial and nondevelopmental items in preference to initiating a new development effort. The 1994 and 1996 Acts also required acquisition personnel to use new techniques and new skills for buying commercial items to meet DoD needs. In his comments to the Section 800 Panel Report* that led to the acquisition reforms made in the 1994 and 1996 Acts, the Deputy Inspector General, DoD, stated that commercial suppliers would not have to demonstrate viability of evolved and modified commercial items as stand-alone products in the competitive marketplace. Further, he emphasized that contracting officers would not have an established baseline to determine price reasonableness for evolved and modified commercial items, which would lead to additional program risk. Accordingly, the 1994 and 1996 Acts also increased program risks associated with buying commercial items.

Definition of Nondevelopmental Items. The 1994 Act, the FAR, and DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," March 15, 1996, require contracting officers to give preference to procuring commercial items first and nondevelopmental items second before considering the development of a new item to satisfy stated DoD requirements. The guidance defines systems, subsystems, and components as nondevelopmental items if they:

- were previously developed exclusively for governmental purposes by a Federal agency, a State or local government, or a foreign government with which the United States has a mutual defense cooperation agreement,

- satisfy the previous criteria but need only minor modifications to meet Government requirements, or

- are being produced for governmental purposes but are not yet in use.

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*In Section 800 of Public Law 101-510 (the National Defense Authorization Act of FY 1991), Congress directed DoD to establish the "DoD Advisory Panel on Streamlining and Codifying Acquisition Law." The Advisory Panel's January 1993 report, "Streamlining Defense Acquisition Law," is commonly referred to as the Section 800 Panel Report.

Audit Objective

The audit objective was to determine lessons learned from the acquisition management of Defense systems developed and procured using modified commercial item and nondevelopmental item acquisition strategies. Specifically, we reviewed and identified lessons learned for program definitions; program structures; program designs; contracting; program assessments; and decisions, reviews, and periodic reporting and management controls related to the objective. In Appendix A, we discuss the scope and methodology used to accomplish the objective as well as management controls. In Appendix B, we discuss prior audit coverage. In Appendix C, we list the 37 modified commercial and nondevelopmental item acquisitions reviewed.

Lessons Learned From Acquiring Modified Commercial and Nondevelopmental Items

Defense buying organizations have made progress in strengthening acquisition strategies used to acquire modified commercial and nondevelopmental items. The organizations identified many lessons learned from acquiring the commercial-type items that can be summarized as a shift in efforts taken to manage program uncertainties associated with those acquisitions. For the most part, the organizations identified program uncertainties resulting from the transfer of acquisition management control from buying organizations to commercial suppliers. Program management efforts intensified because to remain competitive in the commercial market place, commercial suppliers often retain proprietary rights to technical data affecting or describing product performance, quality, and logistical support. To effectively manage modified commercial and nondevelopmental items, the buying organizations must identify those uncertainties and develop acquisition strategies to manage them, including requiring commercial suppliers to substantiate product performance, quality, and logistical support claims before the Government acquires the items.

Lessons Learned

In contrast to new development efforts, buying organizations can acquire modified commercial and nondevelopmental items at a lower cost and with faster deliveries when buying organizations develop acquisition strategies to effectively manage program uncertainties. In commenting on acquisition strategies, the 37 buying organizations identified lessons learned that generally could also be applied to the management of all DoD acquisitions, that is, new development efforts as well as modified commercial and nondevelopmental item acquisitions. For example, the buying organizations identified 91 lessons learned that related to developing the acquisition strategy. Of the 91 lessons learned, 61 lessons could also be applied to the management of acquisitions in general, such as the following lessons:

- program offices must involve all interested parties early in the acquisition process,

- contracting officers should develop achievable schedules that include appropriate funding reserves for unforeseen delays, and

- contracting officers should develop realistic, not optimistic, schedules to satisfy user requirements.

We summarized and categorized the lessons learned by critical program management element, that is, program definition, program structure, and program design as defined in DoD Regulation 5000.2-R. Although not specifically described in DoD Regulation 5000.2-R, we also categorized lessons learned about contracting issues because of the significant differences that may exist in contracting in a commercial environment and in a Government environment.

Appendix D is a detailed listing of many of the lessons learned by program management element for the 19 modified commercial item acquisitions reviewed, and Appendix E is a detailed listing of the lessons learned for the 23 nondevelopmental item acquisitions reviewed. Of the 37 programs reviewed, 5 programs involved the acquisition of both modified commercial and nondevelopmental items. As shown in Appendixes D and E, the buying organizations identified many lessons learned that were common for acquiring modified commercial and nondevelopmental items. The common lessons occurred because organizations, in developing acquisition strategies, were required by DoD Regulation 5000.2-R and the FAR to take actions necessary to protect the Government's interests and to resolve program uncertainties related to acquiring modified commercial and nondevelopmental items to satisfy user operational requirements. In cases where the lessons learned implemented FAR and Defense Federal Acquisition Regulation Supplement policies, we referenced the corresponding policies in Appendixes D and E. In all, the buying organizations identified 241 lessons learned associated with their efforts to cost-efficiently and effectively acquire modified commercial and nondevelopmental items.

Program Definition. Program definition is the process of translating broadly stated mission needs into a set of operational requirements from which specific performance specifications are derived. DoD Regulation 5000.2-R says that "use of that process helps ensure that programs are well-defined and carefully structured to represent a judicious balance of cost, schedule, and performance; available technology; and affordability constraints."

Buying organizations for 4 of the 37 programs reviewed identified lessons learned associated with program definition. One of the lessons learned was that users need to participate in the acquisition process as early as possible so that they understand the nature, potential limitations, and advantages of available modified commercial and nondevelopmental items. That is, users must define system requirements that allow for consideration of modified commercial and nondevelopmental items in the acquisition process as is required by FAR 11.002(a)(2)(ii). Further, the buying organizations stated that requirement

definitions should be broad enough in the requests for proposal to increase competition rather than limit the acquisitions to single-source suppliers as is required by FAR 11.002(a)(1). Consistent with FAR 10.002, buying organizations need to communicate and cooperate with users early to ensure flexibility in system requirements while providing users with knowledge of potential modified commercial and nondevelopmental items that may meet their needs.

Likewise, as requirements are refined and changed, the user and buying organization must recognize the limits of modified commercial and nondevelopmental item acquisitions and either adjust the requirements or adjust the acquisition strategies. For example, Office of the Inspector General, DoD, Report No. 95-193, "DoD Hotline Allegations Regarding the Naval Special Warfare Patrol Coastal Ship and Rigid Inflatable Boat Acquisition Programs," May 15, 1995, reports that the Navy had modified requirements for the Naval Special Warfare Patrol Coastal Ship acquisition program beyond the point where a nondevelopmental item could satisfy the requirements. In that case, the Navy deviated from a nondevelopmental items acquisition approach without conducting necessary risk analyses to support the decision.

Program Structure. Program structure identifies management elements that are necessary to structure a successful program. The elements address what the program will achieve (program goals); how the program will be developed, procured, or both (acquisition strategy); how the program will be evaluated against what was intended (test and evaluation); and what resources will be needed for the program (life-cycle resource estimates). Properly tailored program strategies form the basis for sound management and include innovative ways to achieve program success.

Buying organizations for 18 of the 37 programs reviewed identified lessons learned associated with program structure. The organizations indicated that failure to understand the marketplace environment can affect program structures and lead to flawed assumptions about product performance, quality, and logistical support. For modified commercial items, the buying organizations stated that commercial suppliers often exaggerate product performance and operating parameters for competitive reasons. FAR 12.205 cautions that "agencies should, as part of market research, review existing product literature generally available in the industry to determine its adequacy for purposes of evaluation." Further, commercial suppliers may make material substitutions and manufacturing process changes during production that may affect product quality to sustain and increase their share of the product marketplace. Also, depending on market sensitivities, commercial suppliers sometimes make

products obsolete, which limits the extent of logistical support available to users. In reference to nondevelopmental items, for example, Army Audit Agency Report No. NE-90-209, "Acquisition of Nondevelopmental Items Fort Monmouth, New Jersey," September 11, 1990, reports that the Army did not properly test nondevelopmental items and did not properly support the logistics support concepts for nondevelopmental items.

Accordingly, the buying organizations identified lessons learned that related to acquisition strategy and test and evaluation that can be used to avoid and defend against those marketplace realities.

Acquisition Strategy. Buying organizations stressed the importance of devising acquisition strategies to manage program uncertainties identified in risk management plans that may impact product performance, quality, and logistical support.

Performance. In the contract request-for-proposal process, the buying organizations indicated that commercial suppliers often exaggerate product performance and operating capabilities to obtain competitive advantages. FAR 12.205 cautions buying organizations to review product literature to determine its adequacy for purposes of evaluation through market research to avoid such problems. The buying organizations also described other management actions taken in the acquisition strategies to verify and validate product performance and operating capabilities that were linked to requirements development, risk management, product testing, commercial and nondevelopmental product integration, and contractor submissions. Examples of lessons learned follow:

- Buying organizations must adequately test commercial products to ensure that the products live up to their specifications because commercial specifications tend to be optimistic.

- Contracting officers should require verification testing of contractor-furnished product performance data.

- Buying organizations should fully understand commercial product procurement and testing information.

Quality. To maintain product price competitiveness, the buying organizations indicated that commercial suppliers often made material substitutions and manufacturing process changes. As a result, product quality could change during the item life-cycle. Recognizing those possibilities, the buying organizations described management actions taken in their acquisition strategies to maintain product integrity for modified commercial and nondevelopmental items through test strategies, contracting documents, and logistical support plans. Examples of lessons learned follow:

- Buying organizations should recognize that parts obtained from different commercial suppliers may not function the same as original equipment manufacturers' parts.

- Buying organizations should understand that configuration tracking and material support can become difficult when commercial suppliers make changes to equipment unilaterally.

- Contracting officers should consider including contract provisions requiring commercial suppliers to update technical documentation to reflect configuration management changes.

Logistical Support. Buying organizations reported that continued logistical support for items after fielding is a significant area of uncertainty for modified commercial and nondevelopmental item acquisitions. While limited logistical support after item deliveries may be sufficient for commercial consumers, the buying organizations indicated that most often the limited logistical support is not sufficient for DoD life-cycle logistical support requirements. Specifically, commercial suppliers often make hardware and software improvements and, as previously indicated in this report, substitute components or change production processes to sustain and increase their marketshare. Depending on marketplace sensitivities, the buying organizations indicated that logistical support after item deliveries for modified commercial and nondevelopmental items can vary from 2 years to 5 years. Accordingly, the buying organizations identified efforts to manage program uncertainties in their acquisition strategies to enable users to operate and maintain acquired systems over the required items' life-cycles when contract warranties expire and when maintenance and supply support cease. Buying organizations need to implement efforts to manage program uncertainties in their acquisition strategies because commercial suppliers are reluctant to disclose proprietary design and production information. Recognizing the logistical support problem, buying organizations described actions taken in their lessons learned that would mitigate logistical

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uncertainties through maintenance support, warranties and data rights, configuration management, documentation, and parts provisioning. Examples of lessons learned follow:

- Contracting officers should consider including contract option(s) for parts and technical data buyouts to support future user logistics requirements.

- Buying organizations should consider requiring that a third party hold technical data in escrow for Government use after commercial supplier support ends if the product life-cycles extend beyond commercial supplier support.

- Buying organizations need to verify that commercial supplier parts support is longer than the anticipated part life-cycle.

Test and Evaluation. Buying organizations emphasized the need, consistent with commercial practices, to include sufficient testing before and after contract award to ensure that modified commercial and nondevelopmental items will work in the military environment, which can be significantly different from the environment for which commercial suppliers developed the items. Prior audit reports identify that need as a significant acquisition management problem. The buying organizations also indicated that program offices should pay particular attention to how commercial hardware and software specification products will be integrated into military specification platforms and should identify the resources and testing that buying organizations will need to accomplish the integration. Examples of lessons learned follow:

- Buying organizations must recognize that early test and evaluation of commercial components is important when commercial suppliers are modifying a commercial system.

- Buying organizations should use conformance-testing of commercial products in the source-selection process to provide assurance that products function properly in a specific integrated system configuration (the larger and more complex the system, the higher the risk).

- Buying organizations should consider requiring the performance of operational testing and evaluation as part of the source-selection process.

Program Design. Program design establishes the basis for a comprehensive, structured, integrated, and disciplined approach to the life-cycle design of major weapons and automated information systems. Through the system engineering process, the program manager is to translate operational needs, requirements, or both into a system solution that includes the design, manufacturing, test and evaluation, and support processes and products.

Buying organizations for 14 of the 37 programs reviewed identified lessons learned associated with program design. Buying organizations indicated that program offices should implement acquisition strategies that recognize the ability to upgrade or second source modified commercial and nondevelopmental items as the program evolves. Specific lessons learned included the following:

- Buying organizations need to acquire systems that use open systems architecture to negate the need for commercial product data to avoid using single-source products or product features that are unique to a single manufacturer.

- Buying organizations should purchase the necessary technical data rights for electrical interfaces, protocols, and performance parameters of critical circuit card subcomponents when obtaining open system architecture components to preserve the opportunity to accomplish later growth options and engineering change proposals in an inexpensive manner.

The buying organizations also stated that another tool to reduce program uncertainties during program design is prototyping. Through prototyping, buying organizations can identify product interoperability problems associated with using other commercial suppliers to supply the same or similar item.

Contracting. Contracting describes work requirements, specifications, costs, deliverables, administration, restrictions, and limitations between the Government and contractors. The selection of contractual sources and contract requirements must be well thought out and tailored to accomplish stated objectives while ensuring an equitable sharing of program management risks.

Buying organizations for 12 of the 37 programs reviewed identified lessons learned associated with contracting. The buying organizations pointed out the need for personnel associated with the selection, award, and administration of contracts for modified commercial and nondevelopmental items to understand the limitations and advantages of acquiring those items and to provide oversight of the program accordingly. Specific lessons learned were as follows:

- Contracting officers should consider the use of operational demonstrations during source selection.

- Contracting officers should compare the quality of the product and future service requirements against the contractors' past performance to meet current needs.

- Contracting officers should clearly define the contract administration organization's role in product quality assurance.

Managing Program Uncertainties

The majority of lessons learned discussed previously and in Appendixes D and E are actions to manage program uncertainties. Based on discussions with buying organization officials and reviews of supporting documentation, the biggest challenge facing program mangers acquiring modified commercial and nondevelopmental items is understanding the program uncertainties involved with those types of acquisitions and effectively managing them. The buying organizations designed strategies to either avoid, reduce, transfer, or assume program acquisition uncertainties relating to program definition, program structure, program design, and contracting. Buying organization actions taken to manage acquisition uncertainties did not attempt to eliminate the uncertainties but rather attempted to monitor and manage uncertainties to minimize their effects on programs. Examples of management actions that buying organizations can take on future acquisitions of modified commercial and nondevelopmental items include:

- placing more reliance on use of proven contractor logistical support networks;

- developing requirements that take maximum advantage of commercial items with previous commercial testing; and

- making the prime integrating contractor a major stakeholder in the acquisition.

Progress Made

When compared with shortcomings identified in prior audit reports, buying organizations have made progress in strengthening acquisition strategies used to acquire modified commercial and nondevelopmental items. After greater exposure to those types of acquisitions, buying organizations realize that commercial suppliers will not always be forthcoming about product performance, reliability, and subsequent logistical support. As a result, buying organizations are now addressing in their acquisition strategies the need for commercial suppliers to substantiate with test results their claims for product performance, quality, and logistical support. In addition, buying organizations are more attuned to users' needs and requirements by making efforts to include them on integrated product teams early in the acquisition process. Such early involvement is essential in the effective use of commercial items. Because of past integration, interface, and interoperability problems in which modified commercial and nondevelopmental items become part of larger systems, buying organizations are also placing greater emphasis on actions that management can take to mitigate against the uncertainties associated with those problems.

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Conclusion

Buying modified commercial and nondevelopmental items offers DoD buying organizations the opportunity to acquire items at a lower cost and with faster deliveries. However, to obtain those benefits, buying organizations should recognize the program uncertainties involved with the acquisitions that affect product performance, quality, and logistical support.

Based on our audit results and analysis of prior audit reports, effective use of modified commercial and nondevelopmental items requires that buying organizations develop and implement acquisition strategies that:

- ensure that users of the items are involved early in the acquisition process and understand the nature, potential limitations, and advantages of modified commercial and nondevelopmental items. Only in that way can the user and acquisition community maintain the flexibility that is needed in establishing requirements to make effective use of the modified commercial and nondevelopmental item.

- include sufficient testing, consistent with commercial practices, before and after contract award to ensure that the modified commercial and nondevelopmental items will work in the intended military environment.

- focus attention on hardware and software integration, interface, and interoperability testing efforts and on the resources that are needed to successfully conduct the tests when modified commercial and nondevelopmental items are integral components and subsystems of larger systems.

- address how modified commercial and nondevelopmental items will be maintained and supported when fielded because Government access to technical data will most likely be limited, and availability of parts supplied may cease before the intended military life-cycles of the items expire.

- realistically recognize the extent of time and money necessary to integrate modified commercial and nondevelopmental items into military systems and applications.

In addition, buying organizations must not assume that because an item is a modified commercial or nondevelopmental item it does not require Government oversight and management. Buying organizations must tailor oversight and management to the circumstances of the particular acquisition and must base them on an assessment of the program uncertainties affecting the acquisition. Specifically, buying organizations need to:

- identify program uncertainties associated with a particular modified commercial or nondevelopmental acquisition and make plans to manage the program uncertainties,

- ensure that all buying organization personnel associated with the selection and award of a modified commercial and nondevelopmental item understand the limitations and advantages of that type of acquisition and provide the oversight of the program accordingly, and

- ensure that all personnel involved with acquisitions of modified commercial and nondevelopmental items understand the need to be able to upgrade or second source those items as the program evolves over time.

DoD's Acquisition Reform Office plans to disseminate lessons learned from commercial and nondevelopmental item acquisitions through the internet *Commercial Advocates Form* homepage at http://www.acq.osd.mil/ar/cadv.htm. Through electronic postings, DoD plans to provide buying organizations with useful information on how to acquire modified commercial and nondevelopmental items from commercial suppliers.

Part II - Additional Information

Appendix A. Audit Process

Scope

We conducted this program results audit from October 1996 through June 1997 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We reviewed 10 Army, 23 Navy, and 4 Air Force acquisition programs in which the Military Department was acquiring modified commercial and nondevelopmental items as entire systems, subsystems, or major components. The 37 acquisition programs consisted of 6 Acquisition Category I programs, 4 Acquisition Category II programs, 16 Acquisition Category III programs, and 11 non-acquisition category programs. Appendix F defines the three acquisition categories. We estimated that total funds spent for the 37 programs will exceed $16 billion. At the program offices for modified commercial and nondevelopmental items, we identified lessons learned in developing acquisition strategies for program definition; program structure; program design; contracting; program assessments; and decisions, reviews, and periodic reporting. Accordingly, we included tests of management controls as considered necessary.

Methodology

We used available information from ongoing and past management efforts of modified commercial and nondevelopmental item acquisitions to identify lessons learned. In addition, we visited 22 of the 37 buying organizations to discuss specific lessons learned. We also reviewed audit reports addressing acquisitions of modified commercial and nondevelopmental items to determine whether the acquisition community is making progress in developing acquisition strategies that avoid some of the acquisition difficulties identified in earlier audit reports. We did not rely on computer-processed data or statistical sampling procedures to develop conclusions on this audit.

Contacts During the Audit. We visited or contacted individuals and organizations within the DoD. Further details are available on request.

Management Control Program

Requirement for Management Control Review. DoD Directive 5010.38, "Management Control (MC) Program," August 26, 1996, requires DoD managers to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

Scope of Review of the Management Control Program. We limited our review because of the relevant coverage in Inspector General, DoD, Report No. 96-028, "Implementation of the DoD Management Control Program for Major Defense Acquisition Programs," November 28, 1995. The report discusses the effectiveness of the management control program that the Defense Acquisition Executive and Component Acquisition Executives used for major Defense acquisition programs. The report concludes that the acquisition community had not effectively integrated DoD Management Control Program requirements into its management assessment and reporting processes. As a result of the report recommendations, the Under Secretary of Defense for Acquisition and Technology integrated DoD Directive 5010.38 requirements into the March 15, 1996, revision to DoD Directive 5000.1, "Defense Acquisition," and DoD Regulation 5000.2-R. Acquisition managers are now to use program cost, schedule, and performance parameters as control objectives to implement the DoD Directive 5010.38 requirements. The managers are to identify material weaknesses through deviations from approved acquisition program baselines and exit criteria in the "Defense Acquisition Executive Summary" report. Consequently, we limited our review to management controls directly related to the critical program management elements of the acquisition programs reviewed.

Adequacy of Management Controls. Management controls were adequate in that we did not identify any systemic management control weakness applicable to our primary audit objective.

Appendix B. Summary of Prior Coverage

During the last 8 years, the General Accounting Office; the Office of the Inspector General, DoD; the Army Audit Agency; and the Air Force Inspector General have issued 16 reports that cover issues related to this audit. The audits addressed the process associated with either nondevelopmental item acquisitions or issues related to a specific nondevelopmental item acquisition.

General Accounting Office

Report No. GAO/NSIAD-97-3 (OSD [Office of the Secretary of Defense] Case No. 1215), "The Government's Market Research Efforts," October 11, 1996, reports that Government market research efforts varied widely, but that the variances appeared to be appropriate. For instance, the Department of Defense emphasized the use of market research for commercial items and nondevelopmental items more than the civilian agencies did before the Federal Acquisition Streamlining Act of 1994, primarily because of statutory requirements that applied to the Department of Defense. Results from 21 contracts reviewed showed that agencies:

- obtained commercial or nondevelopmental items in 16 of the 21 contracts, although for 3 of 16 contracts, market research was, for legitimate reasons, not performed and

- used market research to obtain Government-unique items or services in 5 of the 21 contracts.

Report No. GAO/NSIAD-96-4 (OSD Case No. 1033), "Medium Trucks Passed Key Operational and Technical Tests," January 8, 1996, reports that overall, the Army Family of Medium Tactical Vehicle trucks performed satisfactorily; however, many of the test vehicles were not produced on the production line or were retrofitted to correct past deficiencies. The report states that "if the Army's comparison tests include full-production and retrofitted trucks, [the Army] should have adequate assurance that the trucks continue to meet the Army's performance and reliability, availability, and maintainability requirements." The Department of Defense concurred with the report. The Family of Medium Tactical Vehicle trucks program is an Army nondevelopmental item acquisition.

Report No. GAO/NSIAD-96-2 (OSD Case No. 1030), "Hunter System Is Not Appropriate For Navy Fleet Use," December 1, 1995, concludes that the Joint Tactical Unmanned Aerial Vehicles project office was proceeding with the acquisition of the Hunter shipboard variant unmanned aerial vehicle even though Navy fleet commanders stated that they did not want that system on naval ships. The report recommended a halt to the acquisition of Hunter shipboard variants unmanned aerial vehicle system until the Navy completes an assessment of shipboard unmanned aerial vehicle requirements, determines whether the Hunter system will meet the requirements, and determines whether fleet commanders will use the Hunter system. The Department of Defense comments were responsive to the report recommendations. The Hunter shipboard variant unmanned aerial vehicle system is a nondevelopmental item acquisition.

Report No. GAO/NSIAD-95-161 (OSD Case No. 3349), "Maneuver System Schedule Includes Unnecessary Risk," September 15, 1995, reports that the Joint Tactical Unmanned Aerial Vehicles project office planned to begin production of the Maneuver System without adequate assurance that the system could meet operational requirements. Recommendations for the Pioneer and Hunter nondevelopmental item acquisitions included changing the Maneuver System's acquisition strategy to require that sufficient operational tests be conducted before the start of low-rate initial production. The Department of Defense did not commit to performing the operational tests before low-rate initial production.

Report No. GAO/NSIAD-89-51 (OSD Case No. 7923), "DoD Efforts Relating to Nondevelopmental Items," February 7, 1989, concludes that the Department of Defense could strengthen its efforts to buy nondevelopmental items. Report recommendations include making resources available to ensure proper training for acquisition personnel concerning nondevelopmental items and determining whether a regulatory change is needed relating to exemptions from cost or pricing data requirements based on established catalog or market prices. The General Accounting Office did not request or obtain comments from the Department of Defense.

Inspector General, DoD

Inspector General Report No. 97-145, "Purchasing Commercial Products," May 23, 1997, reports that the DoD buying commands were purchasing commercial products when practicable. The Army, Navy, Air Force, and Defense Logistics Agency buying commands conducted market research to identify commercially available products to satisfy their needs. The report had no recommendations.

Inspector General Report No. 96-111, "Allegations Involving the Procurement of the Hunter Unmanned Aerial Vehicle-Short-Range System," May 7, 1996, reports that the Hunter Unmanned Aerial Vehicle-Short-Range low-rate initial production system did not conform to contract requirements, did not have adequate reliability, and did not experience system operational testing. The report did not make recommendations for corrective action because of the scheduled termination of the program. The Hunter unmanned aerial vehicle program is a nondevelopmental item acquisition.

Inspector General Report No. 96-020, "Contractor's Performance on the Family of Medium Tactical Vehicles Program," November 1, 1995, reports that the contractor for the nondevelopmental item acquisition of the Family of Medium Tactical Vehicles had not attained the level of production necessary to meet contractual delivery schedules. Recommendations include revising the delivery schedule, holding the contractor accountable to meet a revised delivery schedule, including a liquidation damages clause in future Family of Medium Tactical Vehicles contracts, and determining the need for a second source for the Family of Medium Tactical Vehicles. The Army comments were responsive to the intent of the report recommendations.

Inspector General Report No. 96-005, "Quick-Reaction Audit Report on Conditional Acceptance of Medium Tactical Vehicles," October 12, 1995, reports that the Family of Medium Tactical Vehicles program office had conditionally accepted incomplete nondevelopmental vehicles from the contractor and planned to conditionally accept additional vehicles, which was not in the best interest of the Government. The report recommended that the Army stop conditionally accepting vehicles under the Family of Medium Tactical Vehicles program. In December 195, the Deputy Assistant Secretary of the Army (Procurement) concurred, stating that the contractor had refined his production processes and would retrofit the 552 conditionally accepted vehicles. However, as of August 31, 1997, the Army had conditionally accepted another 4,960 vehicles. The Army has fully accepted only 57 vehicles.

Inspector General Report No. 95-193, "DoD Hotline Allegations Regarding the Naval Special Warfare Patrol Coastal Ship and Rigid Inflatable Boat Acquisition Programs," May 15, 1995, reports that the Naval Sea Systems Command deviated from a nondevelopmental items acquisition approach without conducting necessary risk analyses to support the decision. The Navy had modified the ship requirements beyond the point at which a nondevelopmental item could satisfy them. The report recommendation directed the Navy to properly document as lessons learned the events that occurred during the acquisition of the Patrol Coastal Ship and Rigid Inflatable Boat Acquisition Programs and to disseminate the lessons-learned to appropriate Navy acquisition officials. The Naval Sea Systems Command prepared a lessons learned document as recommended. The lessons learned were:

- In general, combining requirements leads to larger platforms. A detailed requirements review with the program sponsor and operators could have eliminated the perception that the platform was too large or was larger than needed to meet the requirements.

- When the decision to commission the Patrol Coastal Ship and Rigid Inflatable Boat Acquisition Programs was made, the program office should have conducted an independent impact study and taken the time necessary to address the concerns of Commander, Naval Sea Systems Command.

- The Naval Sea Systems Command should not have accelerated the Rigid Inflatable Boat program design, but should have taken the time necessary to minimize the risk in the design.

- Because the requirements within the Operational Requirements Document were more restrictive than those within the Non-Acquisition Program Definition Document, the Naval Special Warfare Rigid Inflatable Boat program office should have determined areas in which requirements could have been compromised without loss of mission effectiveness.

- The Naval Sea Systems Command did not perform an adequate risk analysis, which would have shown the high technical risk driven by the failure of commercial vessels to meet the Operational Requirements Document and the compressed schedule.

- A low-rate initial production Rigid Inflatable Boat contract should have been awarded as a first article contract with only the first 2 boats authorized to be built and tested before the remaining 16 boats in the contract could be built. Limiting the initial production contract to the first two boats for test purposes would have minimized the production risk for the remaining boats.

- The Naval Special Warfare Rigid Inflatable Boat program office and the Naval Sea Systems Command should have developed a realistic obligation program plan.

Inspector General Report No. 92-107, "Effectiveness of DoD Use of Nondevelopment Items in Major Defense Acquisition Programs," June 22, 1992, reports that program offices for major Defense acquisition programs did not consider use of nondevelopmental items to the maximum extent practicable. Nondevelopmental item investigations were made at system and parts levels, but generally were not made at the subsystem and component levels. The report recommended that the Defense Acquisition Board committees address in the integrated program assessment the nondevelopmental item candidates for research and results of the nondevelopmental items researched at Milestones I and II, respectively. Management implemented the report recommendations.

Army Audit Agency

Army Audit Agency Report No. NE-91-204, "Acquisition of Nondevelopmental Items," June 17, 1991, reports that Army key decisions, such as streamlining the acquisition process and entering production without a research and development phase, were not adequately supported. The Army did not comply with policies and procedures requiring technical and user testing of nondevelopmental items before production. Recommendations include:

- reemphasizing the need for program managers to perform complete market investigations in support of acquisition strategies for nondevelopmental items;

- clarifying Army policy concerning the concept formulation process for nondevelopmental items;

- eliminating integration projects as a category of nondevelopmental items; and

- reemphasizing to milestone decision review members that they ensure that the acquisition strategies fully explain and justify all streamlining actions, that the results of independent evaluations of market investigations are available for review, and that the test plans are completed before decision reviews authorizing the award of nondevelopmental item contracts.

The Army concurred with the report recommendations. The report summarizes the audit results identified in the next three Army audit reports.

Army Audit Agency Report No. NE-90-209, "Acquisition of Nondevelopmental Items Fort Monmouth, New Jersey," September 11, 1990, reports that the Army did not properly test nondevelopmental items and did not properly support the logistics support concepts for nondevelopmental items. Also, acquisition strategies did not adequately address steps to tailor the acquisition process. Report recommendations include:

• establishing controls to ensure that the acquisition strategy addresses all phases of the acquisition process for nondevelopmental item projects,

• establishing controls to ensure that technical and operational testing and evaluation were done before nondevelopmental items enter production unless independent reviews conclude that tests are not needed, and

• analyzing support concepts for nondevelopmental items to ensure proper nondevelopmental item support.

The Army concurred with the recommendations and established procedures that made Army buying organizations address all phases of the acquisition process, perform technical and operational testing before nondevelopmental items enter production, and analyze support concepts.

Army Audit Agency Report No. EC-90-211, "Acquisition of Nondevelopmental Items -- Program Executive Officer, Combat Support and U.S. Army Tank-Automotive Command, Warren, Michigan," August 21, 1990, concludes that most nondevelopmental items fielded or about to be fielded were not properly evaluated for reliability. The report recommended that all nondevelopmental items acquisitions with approved requirements documents from January 1982 through September 1986 establish a plan to evaluate whether cost-effective reliability data can be obtained for nondevelopmental items rebuys to determine the quantitative reliability performance of the systems. Management concurred with the recommendation and made reliability studies for nondevelopmental item rebuys.

Army Audit Agency Report No. NE-90-206, "Acquisition of Nondevelopmental Items U.S. Army Natick Research, Development and Engineering Center, Natick, Massachusetts," March 19, 1990, reports that the Army often based acquisition strategies on incomplete information because the Army did not properly conduct market investigations and concept formulation analyses. The report recommended that the Army:

• identify the category of nondevelopmental item projects in acquisition strategies,

• conduct and document market investigations for all acquisition projects,

- establish procedures to ensure that market investigations are fully coordinated with independent evaluators, and

- ensure that proper market investigation and concept formulation packages have been completed for all pre-Milestone I projects.

The Army concurred with the recommendations and implemented procedures that made Army buying organizations conduct market investigations and concept formulation analyses before acquiring nondevelopmental items.

Air Force Inspector General

Air Force Inspector General Report No. PN 95-506, "Nondevelopmental Items (NDI) in Air Force Acquisition," January 3, 1996, reports that the deployment of methodologies and best practices to overcome the challenges traditionally associated with nondevelopmental item acquisitions were missing or inconsistent. Report recommendations include expanding training and tools to program managers and other specialists to encourage a renewed awareness of nondevelopmental item solutions; gathering and disseminating nondevelopmental item best practices to program offices, the test community, and major commands; and ensuring representation from the test community in new start acquisition forums.

Appendix C. Modified Commercial and Nondevelopmental Item Acquisitions Reviewed

	Modified Commercial	Nondevelopmental
Department of the Army		
Biological Integrated Detection System		✓
Cargo Utility Commercial Vehicle		✓
Cargo Utility Global Positioning System Receiver		✓
Communications-Electronics Command Commercial Communications Technology Lab	✓	
Deployable Universal Combat Earthmover		✓
Lightweight Multiband Satellite Terminal		✓
Lightweight Video Reconnaissance System		✓
National Automotive Center	✓	✓
Near Term Digital Radio		✓
Precision Lightweight Global Positioning System Receiver	✓	
Department of the Navy		
Advanced Deployable System		✓
ARC-210 Very High Frequency/ Ultra High Frequency Radio	✓	
Battle Group Passive Horizon Extension System Surface Terminal	✓	
Combat Systems Engineering	✓	✓
Common Support Equipment		✓
Control Display Navigation Unit		✓
Fixed Distributed System	✓	

	Modified Commercial	Nondevelopmental
Department of the Navy (cont'd)		
Ground Proximity Warning System	✓	✓
High Frequency Radio Group		✓
Hull, Mechanical and Electrical Equipment Data Resources System	✓	✓
Joint Maritime Command Information System-Afloat	✓	
Joint Power Projection/ Real Time Support		✓
Medium Tactical Vehicle Remanufacturing Program		✓
Miniature Digital Assigned Multiple Access	✓	
New Attack Submarine	✓	
P100 Portable Firefighting Group		✓
Riverine Assault Craft		✓
Strategic Systems Program	✓	✓
Submarine Message Buffer	✓	
Surface Ship Torpedo Defense a. Launched Expendable Acoustic Device		✓
b. Multi-Sensor Torpedo Recognition and Alertment Processor	✓	
Surveillance Towed Array Sensor System	✓	
Surveillance Towed Array Sensor System - Low Frequency Active		✓
Department of the Air Force		
C-130J Aircraft	✓	
Commercial Aircraft Program	✓	
Military Products From Commercial Lines	✓	
T-1A Aircraft		✓

Appendix D. Buying Organizations' Lessons Learned Summarized by Program Management Element for Modified Commercial Items

Program Definition

- Users should use knowledge of the marketplace to develop and modify operational requirements, which would create greater opportunity for use of commercial items (FAR 10.002 and 11.002[a][2][v]).

- Users should not mix military and commercial requirements (specifications) in operational requirements.

- Users should structure operational requirements so that commercial items can meet military manpower and personnel criteria (FAR 10.002[b] and 11.002[a][2][ii]).

- Users should develop requirements that take maximum advantage of commercial items with previous commercial testing (FAR 11.002[a][2][ii]).

- Buying organizations must communicate and cooperate early with the user to ensure flexibility in the system requirements and to share knowledge of potential commercial items that may be available to meet requirements (FAR 11.203).

- Buying organizations should get the user to buy-in early on contract requirements.*

Program Structure

Acquisition Strategy

Integration:

- Buying organizations should perform risk analyses to ensure that the Government has accounted for all possible pitfalls in the acquisition, support, and life-cycle management of commercially procured systems.

- The buying organizations should require extensive user involvement when integrating commercial hardware and software specification products into military specification platforms.

- The prime integrating contractor needs to be a major stakeholder in the acquisition.*

- When commercial suppliers use commercial software, buying organizations should obtain an understanding of the integrators' plans and processes to select, evaluate, and incorporate commercial software products during software and system development.

* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Communication:

- DoD needs to learn how to act commercially to reap benefits from buying commercial items.

- Buying organizations need to improve their understanding of commercial practices.

- Buying organizations should learn how to work with contractors' businesses as usual methods of operations.

- The Defense Contract Management Command and the Defense Contract Audit Agency should buy-in as the contracting team develops the price analysis strategy.*

Market Research:

- Buying organizations should maximize the use of standard commercial equipment (FAR 11.002[a][2]).

- Buying organizations should perform market surveys to determine the extent of competition and the feasibility of using modified commercial products.

- In determining the feasibility of using commercial items, buying organizations should assess the total system operation and support effectiveness, not just system performance.

- Buying organizations should explicitly consider system-level concerns relating to commonality between subsystems, commonality between programs, compliance with open system architecture standards and guides, and supportability in the commercial assessment and selection process.

- Buying organizations must ensure that commercial software products meet known interface standards (FAR 11.002[a][2]).

- Buying organizations should use market research to identify hardware with a clear upgrade path and capability to transition within the same hardware and operating system families.*

- Buying organizations should use market research to identify assemblies that are readily adaptable to future modifications (FAR 10.001[a][3]).*

- Buying organizations should use market research to obtain commercial systems, subsystems, and components from stable suppliers (FAR 10.001[a][3]).

- Buying organizations should base market research decisions on fairness, competition, and ethics (FAR 1.102[b][3]).*

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

- Buying organizations should aggressively dialogue with interested vendor teams to determine the "best that industry can offer."*

- Buying organizations should contact other commercial operators of similar products (FAR 10.002[b][2][i]).

- Buying organizations should reevaluate Government requirements if the ability of only a few sources to compete in the acquisition is apparent (FAR 10.002).*

- Buying organizations should use state-of-the-practice rather than state-of-the-art hardware and software requirements to reduce program risk.*

- Buying organizations should fully understand commercial product procurement and testing information.

- Buying organizations should identify all commercial options up-front and not leave the choice up to the prime contractors.

Budgeting and Scheduling:

- Buying organizations need to understand limited availability and visibility into the contractor's cost or pricing data.*

- Buying organizations should thoroughly understand commercial cost baselines and options.

- Buying organizations should plan for and allocate additional integration time and resources to resolve interface and performance problems during system development because interoperability is a key issue with commercial products.

- Buying organizations should recognize that contractors will most likely require additional time and effort to incorporate new commercial software product releases into a system and to verify system compatibility.

- Buying organizations should plan for change with technology refreshment when using commercial technology.

Logistical Support:

- Buying organizations should recognize logistical support as the highest risk associated with modified commercial and nondevelopmental item acquisitions.*

- Buying organizations need to verify that commercial supplier parts support is longer than the anticipated part life-cycle.

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

- Buying organizations should consider requiring that a third party hold technical data in escrow for Government use after commercial supplier support ends if the product life-cycles extend beyond commercial supplier support.

- DoD needs to develop training programs to educate personnel in buying and using "best commercial practices" to ensure that logistical support is available when items are fielded.

- Buying organizations should thoroughly consider reprocurement needs in the contract source-selection process.*

Test and Evaluation

- Buying organizations should consider requiring the performance of operational testing and evaluation as part of the source-selection process.*

- Buying organizations should use conformance-testing of commercial products in the source-selection process to provide assurance that products function properly in a specific integrated system configuration (the larger and more complex the system, the higher the risk).

- Buying organizations should develop a sensible test program using previous manufacturer and Government test results.*

- Buying organizations should tailor testing to proven technology to cut costs and to accelerate the program schedule.*

- Buying organizations should tailor testing to address program risk areas.*

- Buying organizations should organize testing to maximize the use of the tests.*

- Buying organizations should plan the conduct of operational testing as early as possible.*

- Buying organizations should plan adequate time for debugging and design updating of systems provided as Government-furnished equipment.*

- Buying organizations must recognize that early test and evaluation of commercial components is important when commercial suppliers are modifying a commercial system.

- To be successful, test organizations need a well defined requirements document and a follow-up test and evaluation master plan.*

- Buying organizations should ensure that performance pass or fail criteria are clearly specified in the contract.*

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

- Buying organizations should thoroughly analyze known deficiencies of commercial equipment before contract award.

- Buying organizations should share test plans and results with contractors.*

- Test organizations should maintain on-site representation during test execution.*

- Buying organizations should ensure that newly delivered equipment is initially single-sited for testing purposes to avoid spreading any undetected problems.*

- Test organizations should test software acquisitions in each fielded configuration of an item to ensure that no operability problems are related to using different item suppliers.*

- Buying organizations must adequately test commercial products to ensure that the products live up to their specifications because commercial specifications tend to be optimistic.

Program Design

Engineering and Manufacturing

Reliability and Maintainability:

- Contracting officers should require contractors to fully disclose item reliability and maintainability data.*

Design for Manufacturing and Production:

- Buying organizations must recognize that modified commercial items require both fabrication and integration as compared to a commercial off-the-shelf product.

- Buying organizations need to acquire systems that use open systems architecture to negate the need for commercial product data to avoid using single-source products or product features that are unique to a single manufacturer.

- Buying organizations should avoid modifying commercial products, if possible, to satisfy stated military requirements.

- When selecting circuit card assemblies for computers, buying organizations should ensure that contractors select items that are easily upgradable because the marketplace rather then the Government drives the life-cycle costs of the equipment.

- System integrators should consider prototyping as means to identify interoperability problems related to the use of different commercial suppliers for critical commercial products.

* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Logistics and Other Infrastructure

Maintenance Support:

- Buying organizations should recognize that long-lead items such as modems, multiplexers, reflectors, and high performance amplifiers are too expensive to stock on shelves.*

- Buying organizations should assess whether contractor logistical support systems are capable of processing large volumes of repairs within limited times.*

- Buying organizations should place more reliance on use of proven contractor logistical support networks.

- For commercial acquisitions, buying organizations should accept and use the support system that is already in place for commercial customers (FAR 10.002[b][1][vi]).

- Contractors are reluctant to disclose expected failure rates for parts provisioning after warranties expire.

- Buying organizations should recognize that parts obtained from different commercial suppliers may not function the same as original equipment manufacturers' parts.

- Buying organizations should not abuse contractor support networks for warranty repairs.*

Warranties and Data Rights:

- Buying organizations should ensure that warranties are enforceable (FAR 12.404).*

- Buying organizations should understand that tracking warranty repairs and recalls can be burdensome.*

- Buying organizations should understand that long-term contract warranties may mean that obtaining technical data rights is unnecessary (FAR 12.211).*

- Buying organizations should thoroughly consider data rights requirements for commercial equipment (FAR 12.211).

- Commercial suppliers will generally not release proprietary rights to technical data that are needed to establish organic repair (FAR 12.211 and Defense Federal Acquisition Regulation Supplement 227.7102).

- Commercial product documentation is sometimes incomplete.

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

- Buying organizations should avoid customizing technical data requirements and should take full advantage of available commercial technical data (FAR 12.211 and Defense Federal Acquisition Regulation Supplement 227.7102).

- Contracting officers should consider including contract option(s) for parts and technical data buyouts to support future user logistics requirements.

- Buying organizations should purchase the necessary technical data rights for electrical interfaces, protocols, and performance parameters of critical circuit card subcomponents when obtaining open system architecture components to preserve the opportunity to accomplish later growth options and engineering change proposals in an inexpensive manner (Defense Federal Acquisition Regulation Supplement 227.7102).

Configuration Management:

- Buying organizations should recognize that commercial technology configuration management requires line replaceable unit management rather than piece part accountability and control.

- Buying organizations should understand that configuration tracking and material support can become difficult when commercial suppliers make changes to equipment unilaterally.

- Buying organizations should communicate item configuration changes to the user during the commercial item life-cycle.

- Buying organizations should maintain a software configuration item baseline if systems will be placed on multiple platforms.*

Documentation:

- Buying organizations should require that user system manuals reference component and subsystem commercial manuals and discuss integration of commercial equipment.

- Buying organizations can reduce required software documentation and the number of program reviews by using commercial software (FAR 12.212).

Parts Provisioning:

- Buying organizations should test reprocured items to ensure form, fit, and function compatibility because commercial suppliers make technical changes without changing parts numbers.

* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Contracting

- Contracting officers should clearly define item requirements before contract award (FAR 12.202[b]).*

- Contracting officers should understand that open system architecture electronic components are not always plug and play and that integrators and subcontractors' products may not always be compatible.

- Industry input on product descriptions and statements of work helps clarify technical aspects and helps reveal alternative ways to meet requirements (FAR 11.002[c]).

- Buying organizations should ensure that product descriptions reflect requirements flexibility by defining functions to be performed and by using such terms as acceptable ranges, targets, or desired and required values rather than exact values (FAR 11.002[a][2]).*

- Contracting officers should prepare requests for proposal in industry format (FAR 12.302[a]).

- Contracting officers should start out with a commercial request for proposal and model the contract accordingly (FAR 12.302[a]).

- Contracting officers should not include burdensome proposal instructions in requests for proposal (FAR 12.301[b][1]).*

- Contracting officers should detail the repair and return concept down to the component level in requests for proposal.*

- Contracting officers should pay close attention to product support in requests for proposal.*

- Contracting officers should require the conduct of proposal or preaward testing so that equipment can be tested for unique military requirements and checked for interfaces with existing systems.

- Contracting officers should set up vendor demonstrations to determine whether actual product performance differs from advertised performance.

- Contracting officers should establish that only the minimum essential features are being demonstrated or else extend the time period to permit full development of a bid sample to increase competition on Government contracts.

- Contracting officers should consider the use of operational demonstrations during source selection.

- Contracting officers should require verification testing of contractor-furnished product performance data.

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

- Contracting officers should compare the quality of the product and future service requirements against the contractors' past performance to meet current needs (FAR 12.206).

- Contracting officers should use innovative cost or pricing analysis techniques.*

- Contracting officers will find it difficult to negotiate with a sole-source provider when cost or pricing data are not required even if the item has a limited commercial sales history.

- Contracting officers should include most favored commercial customer provisions in contracts when such clauses are consistent with standard commercial practice (FAR 12.302[a]).

- Contracting officers should put flexibility in contracts to accommodate variations to system network architectures.*

- Military commanders must fully understand and appreciate commercial practice contract terms.

- Contracting officers should clearly define the contract administration organization's role in product quality assurance in contracts within the limitations of FAR 12.208.*

- Contracting officers should consider including contract provisions requiring commercial suppliers to update technical documentation to reflect configuration management changes when such requirements are consistent with standard commercial practice (FAR 12.302[a]).

- Contracting officers should write concise contract data requirements lists when purchasing data in accordance with FAR 12.211 and Defense Federal Acquisition Regulation Supplement 227.7102.*

- Contracting officers should contract for long-term warranties when past contractor performance indicates program risk.*

- Contracting officers should time procurement actions as closely as possible to the requirement time to preclude parts obsolescence and replacement.*

- Contracting officers should concurrently award procurement and logistical support contracts to reduce program costs.*

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Appendix E. Buying Organizations' Lessons Learned Summarized by Program Management Element for Nondevelopmental Items

Program Definition

- Buying organizations should get the user to buy-in early on contract requirements.*

Program Structure

<u>Acquisition Strategy</u>

Integration:

- Buying organizations should recognize that integration of nondevelopmental items is very difficult and should treat it as a design problem and not a simple production problem.

- The prime integrating contractor needs to be a major stakeholder in the acquisition.*

Communication:

- The Defense Contract Management Command and the Defense Contract Audit Agency should buy-in as the contracting team develops the price analysis strategy.*

Market Research:

- Buying organizations should use market research to identify hardware with a clear upgrade path and capability to transition within the same hardware and operating system families.*

- Buying organizations should use market research to identify assemblies that are readily adaptable to future modifications (FAR 10.001[a][3]).*

- Buying organizations should base market research decisions on fairness, competition, and ethics (FAR 1.102[b][3]).*

- Buying organizations should aggressively dialogue with interested vendor teams to determine the "best that industry can offer."*

- Buying organizations should reevaluate Government requirements if the ability of only a few sources to compete in the acquisition is apparent (FAR 10.002). *

- Buying organizations should use state-of-the-practice rather than state-of-the-art hardware and software requirements to reduce program risk.*

* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Budgeting and Scheduling:

- Buying organizations need to understand limited availability and visibility into the contractor's cost or pricing data.*

Logistical Support:

- Buying organizations should recognize logistical support as the highest risk associated with modified commercial and nondevelopmental item acquisitions.*

- Buying organizations should thoroughly consider reprocurement needs in the contract source-selection process.*

Test and Evaluation

- Buying organizations should consider requiring the performance of operational testing and evaluation as part of the source-selection process.*

- Buying organizations should develop a sensible test program using previous manufacturer and Government test results.*

- Buying organizations should tailor testing to proven technology to cut costs and to accelerate the program schedule.*

- Buying organizations should tailor testing to address program risk areas.*

- Buying organizations should organize testing to maximize the use of the tests.*

- Buying organizations should plan the conduct of operational testing as early as possible.*

- Buying organizations should plan adequate time for debugging and design updating of systems provided as Government-furnished equipment.*

- To be successful, test organizations need a well defined requirements document and a follow-up test and evaluation master plan.*

- Buying organizations should ensure that performance pass or fail criteria are clearly specified in the contract.*

- Buying organizations should share test plans and results with contractors.*

- Test organizations should maintain on-site representation during test execution.*

- Buying organizations should ensure that newly delivered equipment is initially single-sited for testing purposes to avoid spreading any undetected problems.*

* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

- Test organizations should test software acquisitions in each fielded configuration of an item to ensure that no operability problems are related to using different item suppliers.*

Program Design

Engineering and Manufacturing

Reliability and Maintainability:

- Contracting officers should require contractors to fully disclose item reliability and maintainability data.*

- Test organizations should validate the reported reliability of nondevelopmental item components and test them thoroughly in new operational environments.

Logistics and Other Infrastructure

Maintenance Support:

- Buying organizations should carefully evaluate options to determine which is more cost-effective, to replace or to repair nondevelopmental items, when developing the acquisition strategy.

- Buying organizations should recognize that long-lead items such as modems, multiplexers, reflectors, and high performance amplifiers are too expensive to stock on shelves.*

- Buying organizations should assess whether contractor logistical support systems are capable of processing large volumes of repairs within limited times.*

- Buying organizations should not abuse contractor support networks for warranty repairs.*

Warranties and Data Rights:

- Buying organizations should ensure that warranties are enforceable (FAR 12.404).*

- Buying organizations should understand that tracking warranty repairs and recalls can be burdensome.*

- Buying organizations should understand that long-term contract warranties may mean that obtaining technical data rights is unnecessary (FAR 12.211).*

Configuration Management:

- Buying organizations should maintain a software configuration item baseline if systems will be placed on multiple platforms.*

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* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Contracting

- Contracting officers should clearly define item requirements before contract award (FAR 12.202[b]).*

- Buying organizations should ensure that product descriptions reflect requirements flexibility by defining functions to be performed and by using such terms as acceptable ranges, targets, or desired and required values rather than exact values (FAR 11.002[a][2]).*

- Contracting officers should not include burdensome proposal instructions in requests for proposal (FAR 12.301[b][1]).

- Contracting officers should detail the repair and return concept down to the component level in requests for proposal.*

- Contracting officers should pay close attention to product support in requests for proposal.*

- Contracting officers should use innovative cost or pricing analysis techniques.*

- Contracting officers should put flexibility in contracts to accommodate variations to system network architectures.*

- Contracting officers should clearly define the contract administration organization's role in product quality assurance in contracts within the limitations of FAR 12.208.*

- Contracting officers should write concise contract data requirements lists when purchasing data in accordance with FAR 12.211 and Defense Federal Acquisition Regulation Supplement 227.7102.*

- Contracting officers should contract for long-term warranties when past contractor performance indicates program risk.*

- Contracting officers should time procurement actions as closely as possible to the requirement time to preclude parts obsolescence and replacement.*

- Contracting officers should concurrently award procurement and logistical support contracts to reduce program costs.*

* Buying organizations identified asterisked lessons learned as common for acquiring modified commercial and nondevelopmental items.

Appendix F. Categories of Acquisition Programs

DoD divides acquisition programs into categories, generally by size and complexity, to assist in decisionmaking and implementation of statutory requirements. The acquisition categories are as follows.

Acquisition Category I

Acquisition Category I programs are major Defense acquisition programs. A major Defense acquisition program is defined as a program estimated to require eventual expenditure for research, development, test, and evaluation of more than $355 million (FY 1996 constant dollars) or procurement of more than $2.135 billion (FY 1996 constant dollars), or those designated to be Acquisition Category I programs.

Acquisition Category II

Acquisition Category II programs are defined as those acquisition programs that do not meet the criteria for an Acquisition Category I program, but do meet the criteria for a major system. A major system is defined as a program estimated to require eventual expenditure for research, development, test, and evaluation of more than $75 million in FY 1980 constant dollars (approximately $140 million in FY 1996 constant dollars), or for procurement of more than $300 million in FY 1980 constant dollars (approximately $645 million in FY 1996 constant dollars), or those designated to be Acquisition Category II programs.

Acquisition Category III (all other acquisition programs)

Acquisition Category III programs are defined as those acquisition programs that do not meet the criteria for an Acquisition Category I or an Acquisition Category II program.

Appendix G. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
    Deputy Under Secretary of Defense (Acquisition Reform)
    Deputy Under Secretary of Defense (Industrial Affairs and Installations)
    Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
    Deputy Chief Financial Officer
    Deputy Comptroller (Program/Budget)
General Council, Department of Defense
Assistant Secretary of Defense (Public Affairs)

Department of the Army

Assistant Secretary of the Army (Research, Development and Acquisition)
Auditor General, Department of the Army

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Assistant Secretary of the Navy (Research, Development and Acquisition)
Auditor General, Department of the Navy

Department of the Air Force

Assistant Secretary of the Air Force (Acquisition)

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force

Other Defense Organizations

Director, Ballistic Missile Defense Organization
Director, Defense Advanced Research Projects Agency
Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, Defense Special Weapons Agency
Director, National Security Agency
   Inspector General, National Security Agency
Inspector General, Defense Intelligence Agency

Non-Defense Organizations

Office of Management and Budget
Technical Information Center, National Security and International Affairs Division,
   General Accounting Office

Chairman and ranking minority member of each of the following congressional
   committees and subcommittees:

   Senate Committee on Appropriations
   Senate Subcommittee on Defense, Committee on Appropriations
   Senate Committee on Armed Services
   Senate Committee on Governmental Affairs
   House Committee on Appropriations
   House Subcommittee on National Security, Committee on Appropriations
   House Committee on Government Reform and Oversight
   House Subcommittee on Government Management, Information, and Technology,
      Committee on Government Reform and Oversight
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   House Committee on National Security

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